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Fostering Sustainability Competencies and Ethical Thinking in Higher Education: Case Sustainable Chocolate

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Abstract: The context of this empirical research is a hands-on sustainability project by an international group of students, teachers, and entrepreneurs. The aim is to find out what kind of sustainability competencies higher education students can develop in collaboration with university experts and companies, with special focus on students' ethical thinking. The participants (n=35) represented 15 different nationalities and came from diverse disciplinary backgrounds including international business, marketing and communication, applied languages, ICT, tourism, and journalism. The data were gathered via students' learning journals. Based on a theory-driven content analysis of the journal data, the students gained competencies related to systemic curiosity, ethical commitment, moral vision, creative readiness, collaborative acumen, reflective learning, and hands-on change communication. The results underline that Education for Sustainable Development in higher education has fruitful outcomes when it is action-oriented, linking formal with informal learning, supportive of self-directed learning, participatory and collaborative, and embracing transformative pedagogy. To enhance students' reflective and metacognitive abilities, they should be offered theoretical materials and pedagogical guidance to gain deeper conceptual insight into sustainability competencies and ethical thinking. This could support fostering their ethical understanding of the complexities of sustainability challenges and bolster their courage to implement their competencies with more confidence and impact.

Keywords: sustainability competence; ethical thinking; education for sustainable development; higher education

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1. Introduction

The context of our research is university-business collaboration. It has been found that entrepreneurial experiences can be used to motivate students in mandatory courses on sustainable development and ethics (Burden & Sprei, 2021). Trencher et al. (2018) conducted a comparative assessment of different types of master's degrees in a sample of 14 programs from top-performing universities in Europe, Asia, and North America to assess the effectiveness of differing types of programs for fostering sustainability competencies. The findings indicated a need for research-oriented programs to include practice-based didactic approaches for building skills and methods for sustainable development through real-world learning projects with external stakeholders.

Building on these findings, we gathered our research data during a practice-based, multicultural and multidisciplinary co-creation project Sustainable Chocolate. The project was part of a higher education marketing and communication course and research project where 35 students and 11 teachers from six European universities joined forces with two artisan chocolate entrepreneurs, one from Finland and the other from Belgium, to study sustainability challenges and co-create digital storytelling to promote and inspire sustainable chocolate production, marketing, and consumption across cultures. The participants represented 15 different nationalities and came from diverse disciplinary backgrounds including international business, marketing and communication, applied languages, ICT, tourism, and journalism.

The overall aim of education for sustainable development (ESD) is to develop cross-cutting sustainability competencies in learners (Unesco, 2017). Competence is closely linked to action. It is the ability to mobilize resources for solving problems and challenges in life in specific contexts in respect of performances (Wilhelm et al., 2019), "knowing how to act acknowledgeably", and being highly motivated (Safta, 2015). In general, competencies for sustainable development are contextual, normative, and action-oriented (Wilhelm et al., 2019).

In the present study, ESD is understood as a systemic and cross-disciplinary phenomenon involving economic, ecological, and socio-cultural aspects of learning and competence development (Purvis et al., 2019). It aims at developing competencies that empower individuals to reflect on their own actions, taking into account their current and future social, cultural, economic and environmental impacts, from local and global perspectives. As the biosphere, society, and economy are intertwined, our approach to ESD is systemic, interdisciplinary, and global. The basis for long-term sustainability development and survival on the planet is biosphere, followed by society and economy in a circular process (Rockström & Sukhdev, 2016).

Even though ESD has been effectively implemented in higher education in various forms for decades (eg. Tilbury, 2011; Glavić, 2020; Unesco, 2017), it is of prime importance for employers, students, educators, and program administrators to have up-to-date knowledge and understanding of what sustainability competencies higher education programs can develop in practice and how. The aim of this empirical study is to find out what kind of sustainability competencies higher education students can develop in collaboration with international peers, university experts, and companies, with special focus on students' ethical thinking.

The production and consumption of chocolate are a question of ethics throughout the value chain. Consumers' awareness of sustainability challenges increases year after year, which means that companies run the risk of incurring financial loss if they act unethically. Therefore, ecologically and socially responsible forms of production and consumption are gaining more foothold. (Salonen et al., 2014.) Aiming for more sustainable cocoa production is as much an economic concern to major chocolate producers as it is an ethical one (Drew & Boal, 2019). We assume that putting special focus on the ethical components of sustainability competence development and ESD can lead to a more profound understanding of the complexity of sustainability challenges. Such an understanding is crucial for future professionals and decision makers (Biedenweg et al., 2013; Unesco, 2017).

2. Theoretical framework

Competencies consist of cognitive, functional, personal, and ethical dimensions (Commission of the European Communities, 2005, p. 11) and link together complex knowledge, skills, and attitudes (Wiek et al., 2011). Competencies are at the center of learning, and they help to describe desired educational outcomes (Lozano et al., 2017). There is a need for change agents for sustainable development with a normative orientation and knowledge of how to deal with wicked problems and ethical dilemmas related to the transformation toward a more sustainable future (Heiskanen et al., 2016). This underlines the importance of competencies in problem-solving and taking action (Wilhelm et al., 2019).

Many recent research studies on sustainability competencies are based on the work of Wiek and colleagues (eg. Evans, 2019; Redman et al., 2021). Wiek et al. (2011) proposed five key competencies in sustainability: systems thinking, anticipatory/futures thinking, normative/values thinking, strategic thinking, and interpersonal competency. Brundiers et al. (2021) conducted a Delphi study with 14 international experts in sustainability education and refined the framework by Wiek et al. (2011). They proposed two additional competencies: intrapersonal competency or mindset and implementation competency. Key competencies in sustainability identified by Wiek et al. (2011) and Brundiers et al. (2021) are described in Table 1.

Table 1. Sustainability competencies by Wiek et al. (2011, 2016 as cited in Trencher et al., 2018) and Brundiers et al. (2021).

Competency	Cognitive outcome	Behavioral outcome
Systems thinking	Ability to understand the components and interaction of differing systems across domains and scales	Ability to generate and interpret results showing how differing systems interact across domains and scales
Anticipatory/futures thinking	Ability to understand differing future visions, states and impacts related to sustainability	Ability to generate and interpret results showing differing future visions, states and impacts related to sustainability
Normative/values thinking	Ability to understand the (un)sustainability of current/future states, values, ethics, principles, lifestyles, etc.	Ability to generate and interpret results showing the (un)sustainability of current/future states, values, ethics, principles, lifestyles, etc.
Strategic thinking	Ability to understand the design and implementation of interventions and transformative strategies for sustainability	Ability to generate change and evaluate the design and implementation of interventions and transformative strategies for sustainability
Interpersonal competencies	Ability to understand the needs of collaborative and participatory problem-solving for sustainability	Ability to facilitate collaborative and participatory problem-solving for sustainability
Intrapersonal competency/ mindset	Ability to reflect on transformative learning when engaging with sustainability issues and competencies	Self-awareness of one's own values (equity, consumption, human-nature connections, etc.), motivation, and attitudes when engaging with sustainability issues and competencies
Implementation competency	Ability to apply actionable knowledge created through strategic thinking competency	Ability to catalyze cognitively driven and integrated problem-solving competencies towards manifest changes on the ground (hands-on practice)

Brundiers at al. (2021) suggested a hierarchy of competencies, seeing values thinking as a lead-competency, "providing the normative orientation for all other competencies" and being the reference point for values embedded in other competencies (Brundiers et al., 2021, p. 20). The present study follows this train of thought, putting special focus on learners' ethical competence development. Ethics can be defined as a systematic approach and an active process to understand, analyze and distinguish matters right and wrong, good and bad, admirable and deplorable (Rich, 2019, p. 4). Echoing Irving et al. (2002), ethics helps people decide, for example, how to live and what to buy. In this context, values are understood as judgements about what one believes is good or what makes something desirable. Values also influence how a person's character is developed and how people think and behave (Rich, 2019, p. 29).

Based on the concept analysis by Kulju et al. (2016), ethical competence can be defined in terms of character strength, ethical awareness, moral judgement skills, and willingness to do good. In a similar vein, Osbeck et al. (2018) divide ethical competence into four components in line with Rest

(1986): ethical and moral sensitivity, judgement, motivation, and implementation. They stress that ethical competence should be collectively assessed, developed and implemented "in relation to situations, contexts, and knowledge about issues at stake" (2018, p. 204).

Further, empirical studies supporting action-oriented transformative pedagogy (Rieckmann, 2018) have been carried out to build students' professional skills in sustainability. Brundiers and Wiek (2017) identified six professional skill domains of relevance: preventative self-care, effective and compassionate communication, collaborative teamwork, responsive project management, impactful stakeholder engagement, and advanced continuous learning, each skill domain encompassing a diversity of specific skills. They highlighted that course instructors ought to select the most appropriate ones in response to students' circumstances and aspirations. According to Brundiers and Wiek (2017), "change starts within, not outside, ourselves". They state that personal experience in aspiring to change and planning and implementing change can be both humbling and empowering experiences for students, potentially nudging them toward larger and long-term transformations.

Remington-Doucette and Musgrove (2015) evaluated the development of the five key competencies by Wiek et al. (2011) among undergraduates. Their results indicated that students' key sustainability competence development can be enhanced through such pedagogical approaches as problem-based presentation of key sustainability concepts, incorporation of real-world sustainability challenges, and use of hands-on activities, case studies, role-playing, and group work. Further, Sidiropoulos (2018) strongly supported the view that sustainability should be woven into each study programme to encourage a more critical and creative view of human-nature relations and to stimulate students towards transformational change. To achieve this valuable aim in practice, a process of operationalization is required in each case through iteration between educational objectives, competencies, and didactic practices, including assessment. This helps to understand the coherence between high-level abstraction (e.g. values) and practical problem-solving or teaching practice, and their constructive alignment. (Wilhelm et al., 2019.)

According to Biedenweg et al. (2013), it is important to combine ethics education, real examples, and practical exercises to promote the adoption of ethical thinking when making sustainability decisions. Discussions with students holding different perspectives were also found to be critical for effective ethics education (Biedenweg et al. 2013). All in all, debates, computer-based simulations, web-based discussions, self-reflection activities, role playing, and small-group discussions, as well as using multiple expert trainers, integrated cases, and practice-based activities that encourage active trainee participation have shown a positive association with ethics and corporate social responsibility instruction effectiveness (Tormo-Carbó et al., 2018; Watts et al., 2017).

The focus of this empirical research study is on students' competencies. The research questions are:

1. What kind of sustainability competencies can be identified in students' learning process when they collaborate with peers, university experts, and entrepreneurs?
2. What do the students' sustainability competence reflections disclose about their ethical thinking during the learning process?

3. Materials and methods

The Sustainable Chocolate project consisted of an 8-week online module with 90-minute weekly group discussions and an intensive week with daily co-creation workshops (online, due to Covid-19 restrictions) with peers, teachers, and entrepreneurs. During the online module, the students were encouraged to write reflective learning journals (LJs) weekly with the help of semi-structured reflection themes. The themes were in line with the expected learning outcomes of the project-based course and guided the students to discuss the development of their competencies in sustainability, creative planning, multicultural team collaboration and communication, and self-directed learning.

There is ample research to suggest that reflection is not an inherent capacity and that students need "strategies, models, and guidelines" to support them in reflective practices for academic and professional purposes (e.g. Tsingos-Lucas et al., 2017). To help students prepare for reflective learning and writing, the purpose, weekly structure, reflection themes, and assessment principles

of the LJs were shared with them in advance. The pedagogical methods of the course and the reflection guidelines were designed on the basis of the needs of the project challenge. The main purpose of the LJs was to support students in their step-by-step process of identifying sustainability challenges, analyzing stakeholder experiences and needs, and designing customer-focused sustainability marketing solutions in collaboration with international peers, entrepreneurs, and university experts.

The definitions of key sustainability competencies were not, as such, used in either course or LJ design. Instead, a theory-driven analysis of the LJ data was conducted by applying the key competence definitions to the students' considerations, thoughts, and feelings arising from the sustainability marketing challenge and the multi-stakeholder co-creation process. There were differences in the complexity and scale of the students' reflections, but all LJs disclosed evidence of sustainability competence and ethical competence development in line with the key competence definitions.

25 students out of 35 submitted their full LJs with weekly entries. The length of the LJs ranged between 1,000 and 8,500 words, the average length being around 3,000 words. All students gave written permission to use their LJs for research purposes, under the provision that the data are handled and reported anonymously. The students were told that their LJs would not be graded, and it was possible to pass the course without submitting the LJ. Thus, the students were not under pressure to manipulate their entries according to supposed teacher expectations or with the intention of obtaining a higher grade (cf. Walker, 2006, p. 220).

In their discussion of the use of learning journals for qualitative research, Nešić and Spasić-Stojković (2017) consider the advantages and disadvantages of the method in the context of language learning. What is valuable in LJs as a reflective genre is that they provide researchers with insight into the minds of students to better understand their learning process. By way of criticism, it is questionable how realistically the journal entries represent the actual learning experiences and how well the writers are "capable of verbalizing the thoughts they were having while completing a certain task." Furthermore, it is quite demanding for students to commit to making regular entries, and the flexibility of the genre may "produce very unstructured introspective data", which makes it hard for researchers to "find patterns in the obtained data". (Nešić & Spasić-Stojković, 2017, pp. 531–532.)

The language of reflection in the Sustainable Chocolate project was English, which was a non-native language to all but one of the informants. Some students reported difficulties in expressing their thoughts, feelings, opinions, and values in a foreign language, which may affect the accuracy of the verbalizations and consequently the researchers' analyses and interpretations. However, with the help of the weekly reflection themes and related guidance, the students were encouraged to revisit their earlier reflection topics throughout the 8-week writing period, which makes it possible to base the data analysis on a continuum of evolving reflections rather than individual entries. The thematic guidance was also helpful for organizing the personally and culturally diverse data.

While writing is not the only form of reflective practice, learning journals and other genres of reflective writing constitute an important way to support reflection, critical thinking, self-awareness, and problem-solving in higher education (e.g. Chan & Lee, 2021; Tsingos-Lucas et al., 2017; McCarthy, 2011; Walker, 2006). According to a conceptual analysis by Chan & Lee (2021), one of the main benefits of reflection is that it can be used to foster deep learning, learner autonomy, and life-long learning. The main challenges have to do with communication and language skills; understanding of the purpose and processes of reflection; social-emotional insight about ethical and interpersonal aspects of the learning process; and understanding of the purpose and processes of assessment.

When it comes to language in particular, Chan & Lee (2021, p. 9) found that reflective writing requires sophisticated language skills and "can be challenging to both native speakers and non-native speakers alike". Language barriers need to be addressed with adequate pedagogical support, but overall the authors feel that providing integrated multilevel scaffolding for all of the challenges identified is the most effective way to support reflection literacy in higher education from student-learning, teacher-pedagogical, institutional, and sociocultural perspectives.

In the context of the Sustainable Chocolate case, using English as a lingua franca in multicultural teamwork was one of the intended learning outcomes. Thus, keeping a learning journal in English was not only a means of reflection but also a way to gain hands-on practice in written

communication in a foreign language. The students were encouraged to write openly, expressing their thoughts and feelings when describing, analyzing, and critically reconsidering their learning process. To provide a safe space for the students with their heterogeneous cultural, educational, and linguistic backgrounds, they were guided to focus primarily on the reflective content of the LJs, not on rhetoric or grammar (cf. Walker, 2006, p. 219).

To further alleviate students' anxiety over their language skills, autonomous language learning tools and support materials were made available throughout the learning process. To build trust in the learning environment, the students were also given encouraging feedback on their reflective practices, including language. Whilst various interpersonal and linguistic challenges were identified and discussed by students, the LJs proved to be a helpful tool for fostering students' critical awareness and understanding of alternative interpretations and perspectives embedded in sustainability challenges and ethical encounters (cf. McCarthy, 2011, pp. 34, 39).

In addition to the LJs, several other pedagogical tools and design methods were used to facilitate co-creation and gather data from different stakeholders as part of a larger action research project focused on fostering collaborative and self-directed learning. Their use will be briefly described when discussing the students' competence development, but a detailed analysis of their role and impact is beyond the scope of the present article.

The LJ reflections were analyzed following a systematic step-by-step procedure in line with established models of theory driven content analysis and thematic analysis (e.g. Nowell et al., 2017; Merriam & Tisdell, 2016; Guest et al., 2012; Braun & Clarke, 2006). The process was divided into three stages: 1) reading through and organizing the data, 2) analyzing the data by coding and abstraction, and 3) interpreting and reporting the main results.

The key competencies of the theoretical framework (Table 1) were used as the main codes for categorizing the data. Under each key competency, subcategories of knowledge, skills and attitudes were abstracted based on thematic similarities between LJ reflections. In the end, 3–6 subcategories per key competency were identified and tabled along with representative quotes from the LJs. The main codes were then revisited and labeled according to the trends arising from the data. By way of interpretation, a descriptive summary of the main thematic patterns regarding the development of students' five key sustainability competencies proposed by Wiek et al. (2011) was provided, supplemented with a general description of the development of the two additional sustainability competencies proposed by Brundiers et al. (2021).

4. Results

Our theory-driven content analysis of the data demonstrated that the LJs contained reflections related to all competencies proposed by Wiek et al. (2011) and Brundiers et al. (2021). In the LJ entries, the competencies often appeared integrated and intertwined, but still recognizable and complementary. The students gained competencies (main category) and knowledge, skills and attitudes (sub-category) as described in Table 2. They developed systemic curiosity, ethical commitment, moral vision, creative readiness, and collaborative acumen. In addition, they gained practice in reflective learning and hands-on change communication.

Table 2. Key sustainability competencies (main category) and knowledge, skills and attitudes (sub-category) identified by the content analysis of the learning journals (LJs) of the students in the Sustainable Chocolate project.

Main category	Sub-category
Systemic curiosity	• understanding of the need for continuous knowledge seeking and sharing • systemic knowledge about sustainability issues • systemic knowledge about sustainability challenges in the cocoa industry • awareness of the impact of consumption on sustainable change

Ethical commitment	• understanding of the urgent need for systemic change • courage to critically evaluate sustainability actions • skills in assessing one's own values, principles, and lifestyles • skills in reflecting on one's own feelings, emotions and motives • motivation to change one's own attitudes and behavior • motivation to enact sustainable change collectively with others
Moral vision	• ability to envision fairer business models and forms of collaboration • ability to envision a healthier and more ecologically sustainable future • ability to envision threats to the planet and people • ability to envision obstacles to human capacity for change • understanding of the need to increase people's awareness of sustainability issues
Creative readiness	• understanding of the need for inspiring and trustworthy messages to generate change • knowledge about more sustainable options for production and consumption • skills to gain insight into consumer attitudes and behavior • skills in planning strategic and creative solutions for sustainability marketing and communication
Collaborative acumen	• skills in multicultural team communication to facilitate collaborative problem-solving • insight into the importance of empathy and intercultural sensitivity • insight into the importance of situational, contextual and cultural knowledge • insight into effective means of persuasion and motivation • knowledge and skills in change communication
Reflective learning	• skills in reflecting on and regulating one's transformative learning process on both individual and collaborative levels through semi-structured learning journals • skills to experiment with pedagogical tools to support self-directed learning and uncertainty tolerance • critical awareness of one's own values, motivation, attitudes, consumption preferences, and lifestyle choices through customer experience research, empathy mapping, team discussions, and self and peer evaluation exercises
Hands-on change communication	• hands-on experience in designing a customer-focused marketing solution • hands-on experience in producing digital storytelling to increase people's awareness of the sustainability challenges in the cocoa business and to persuade them to change their purchasing behavior • ability to evaluate the development of the creative strategy and its practical implementation through pedagogical tools supporting multi-stakeholder co-creation, collaborative learning, creative planning, digital storytelling, multicultural teamwork, and project management

In terms of systems thinking, the LJs emphasized the importance of systemic curiosity and continuous knowledge seeking. The students underlined the benefits of gaining new knowledge and awareness of sustainability issues on multiple levels: social, cultural, environmental, economic, local and global. In addition, many students reported that an increase in critical awareness had motivated them to apply the takeaways from the Sustainable Chocolate case to wider contexts with an aim to reduce their carbon footprint (e.g. consuming less, recycling more, turning vegetarian, using zero-waste solutions, etc.).

> (S25) ”Now I know a lot about sustainability and how it can affect me and people all around the world. I appreciate more sustainable business and I am going to support such kinds of businesses by buying from them and sharing information to my friends.”

> (S18) “My vision about environment and sustainability in general changed a lot. I got familiar with many different approaches and problems, with solutions as well.”

The urgent need for systemic change was widely recognized and critically assessed through the examples provided by the cocoa industry. The LJs contained thorough discussions of the social, ecological, and economical challenges related to the chocolate business. The topics were covered widely, encompassing breaches of human rights, need for fairer business models, complexities of climate change, loss of biodiversity, threats of deforestation and pollution, and pros and cons of standards and certifications affecting chocolate production, marketing, and consumption.

In terms of normative/values thinking, the LJs demonstrated awareness of the urgent need to contribute to sustainable change. The students emphasized their ethical commitment to saving the planet for future generations, with frequent criticisms of the inequalities embedded in current social and economic systems. The complexity of making sustainable changes was duly noted, but mainly without losing faith in the impact of small choices and steps such as everyday purchasing decisions.

> (S20) “I feel that the sustainability challenges of chocolate production and consumption are urgent, as well as the need for them to be addressed and solved more effectively.”

> (S24) “It is sad that the climate change is already affecting the business of cocoa producers. Knowing this has made me question whether I am making good choices in my day-to-day life regarding sustainability.”

> (S17) “My changed approach towards sustainability makes me feel like a better person, gives me hope of a better future for the rest of the world and the environment and gives me strength that even my little [change] can make the world a better place.”

> (S4) “My goal is to make people realize that just because they close their eyes and turn away from a problem, it still exists.”

Students were willing and motivated to reconsider their own principles and lifestyles, recognizing both needs for change and sustainable developments in their values during the course. They were able to critically assess their ethical commitment to prioritizing sustainability in decision-making and action. For example, they reflected on the importance of trying their best to make sustainable choices when possible, putting things into perspective, and growing more willing to pay higher prices for sustainable goods and services.

The LJs contained ample evidence of students’ ability to express and critically assess the emotions and feelings aroused by sustainability issues. On one hand, they discussed their ethical and moral abhorrence towards forms of ecological destruction, social suffering, and economic inequality. On the other hand, they also repeatedly expressed feeling happy and proud about gaining new knowledge and being able to make sustainable choices accordingly. With an increase in critical awareness, many also grew motivated and inspired to support others in transformation and change.

The students repeatedly expressed deep-rooted frustration at greenwashing. They also actively sought solutions to the problem, and many expressed willingness to help companies and brands to improve the sustainability of their business and the transparency and trustworthiness of their marketing.

The reflections related to anticipatory/futures thinking and strategic thinking were often intertwined: anticipated future scenarios were considered in close relation to strategic interventions that could have a practical impact on the envisioned course of events. The anticipatory reflections expressed a strong moral vision concerning a wide range of short and long-term threats and opportunities to the planet and people.

> (S5) "In the long-term, I would like to be able to base my diet on all-ecological food, but I think that is very complicated and also more expensive, and it will be a long journey. I would also like to grow my own plants."

> (S8) "If we keep on living like we have, the world will end up in a very bad condition. Governments can restrict and discourage non-sustainable lifestyles by adding taxes to products and services."

> (S7) "I would need any inspiration I can get. In my opinion, to live a sustainable life you need to make many sacrifices and it can be really hard to keep it going, especially nowadays when [we are] equipped for buying and buying and buying new products every day."

When discussing the challenges in the cocoa industry, the students stressed the moral obligation to design fairer business models to achieve more sustainable collaboration practices throughout the value chain. In addition, they suggested more effective and trustworthy forms of communication to inspire people to change, such as educational programs, open and honest creative marketing solutions, and more robust standards and certifications, regulations, and tax solutions that would be globally overseen by governments and policymakers.

To develop their creative readiness, the students skillfully identified obstacles potentially impeding people from making sustainable changes. They underlined that people are not likely to have the willpower to change if they regard transformation as too expensive or risky and if making unsustainable decisions is considerably easier than making sustainable ones. Therefore, improving the quality, visibility, availability, and accessibility of sustainable products and services was regarded as strategically important.

> (S12) "I would need to be reminded of sustainability challenges more often. I would also need to be reminded of the goals, the reason why I should make more sustainable choices."

> (S1) "I have learnt the basic blueprint of creating a story for marketing purposes and how to utilize the creative process to generate an idea to solve a problem."

In terms of the development of interpersonal competencies, the students discussed various strategic and creative solutions of sustainability marketing and communication aimed at inducing change in the thinking and behavior of consumers. The following principles were deemed important: applying customer-centric planning methods, fostering dialogue between different stakeholders, highlighting the benefits of sustainable behavior, tapping into emotions, avoiding reproachful and patronizing approaches, and actively breaking myths and negative stereotypes around sustainable behavior.

> (S14) "I think emotional motivation is essential. I feel overwhelmed when I hear about child labor and life-threatening work conditions. I am also touched by the predicted future of our planet. I need to keep these motivations in mind to successfully pursue a sustainable lifestyle."

> (S22) "I like to follow influencers who promote sustainable lifestyles and this encourages me to implement these habits in my daily life as well."

As the students worked in multicultural and multidisciplinary teams, the LJs contained thoroughgoing reflections on team collaboration and communication. Positive attitude, empathy, and intercultural sensitivity were seen as key to boost motivation and facilitate collaborative learning and participatory decision-making.

> (S9) "I had not realized before how the success of group work depends on a good foundation established through team building activities and discussions. I believe that my open and honest attitude has helped the group success as well as my abilities to reflect on my behavior and being empathetic."

The students also brought up the challenges and successes of negotiating around different personal, social and cultural views on sustainability. For example, some countries were found more advanced than others in their public discourses about sustainability. To develop their overall collaborative acumen and leadership skills, the students were required to reassess their own cultural presumptions and learn to address the views and feelings of others with patience and respect, being mindful of varying situations and contexts.

The learning journal and other tools supporting the students' self-knowledge, critical awareness, and reflective learning contributed to the development of their intrapersonal mindset. Such reflective tools made the successes and challenges of the learning process visible and helped students conceptualize their competence development on a metacognitive level.

During the final week of the Sustainable Chocolate project, the student teams developed their implementation competency by creating educational and emotionally appealing digital storytelling targeted at specified audiences. In this final stage, the students took their strategic intervention plans to practice and engaged in hands-on change communication with peers, teachers, and case company representatives through a series of co-creative sessions. Several design tools and methods were used to guide students in their digital storytelling challenge.

5. Discussion and recommendations

The analysis revealed developments in ethical competence in all the domains proposed by Kulju et al. (2016): character strength, ethical awareness, moral judgement skills, and willingness to do good. In the analysis of the LJ reflections, positive nudges in students' ethical thinking were identified as a cross-cutting theme related to all key sustainability competencies. The students were able to identify and evaluate ethical shortcomings in current systems, showing empathy and understanding for global suffering. They did not shy away from critically reassessing their own values and lifestyles and demonstrated willingness to commit to long-term strategies and moral visions for saving the planet and people.

The students also repeatedly emphasized the need to constantly accumulate reliable and relevant systemic knowledge to be both able and motivated to act more sustainably and share knowledge in a manner that is convincing and impactful. This is in line with the ethical competence definitions by Osbeck & al. (2018, p. 203), who also underline the need "to be knowledgeable and have wide discursive frames for reflection" to be better equipped for ethical thinking and action in situational and social contexts.

The LJs contained a wide range of reflections about the sustainability impact of consumption. Only three students (S7, S15, S19) out of 25 felt that despite an increase in their sustainability knowledge and ethical understanding, they would not change their buying behavior, as sustainability was not a priority in their current situation. The others reported that the course motivated them to make changes not only to their consumption habits but often also to their lifestyles overall. This points to potential long-term behavioral changes towards more responsible consumption (cf. Salonen et al., 2014). Brundiers et al. (2021, p. 22) also found that focusing on sustainability goals that are personal and familiar to students lays a ground for them to be able to expand their knowledge and contributions to more complex and abstract sustainability goals in professional contexts.

Students were willing to apply their professional competencies to help spread knowledge and initiate dialogue among different stakeholders to improve the effectiveness and trustworthiness of messaging around sustainable development, taking into account the needs of target audiences in individual, social and cultural contexts. The LJs highlighted the insight that people must be constantly reminded, encouraged, and supported to act sustainably. This is why the students wanted to raise both the volume and quality of sustainability marketing and communication. Many mentioned the need to make sustainable lifestyles mainstream and desirable, a morally compelling social and cultural norm.

The LJs also evinced a desire and sense of empowerment to make changes happen in practice, both individually and in collaboration with others. However, the students were also painfully aware of the limitations and obstacles to human capacity for change and openly doubted their courage and abilities to facilitate transformative learning, especially in multicultural contexts. Planning and

implementing the hands-on sustainability marketing project with international peers, teachers, and entrepreneurs clearly did both humble and empower (Brundiers & Wiek, 2017) the students in a good way. While this gave a boost to their readiness to make strategic and creative interventions with international impact, their misgivings about their transformative, interpersonal, intercultural, and intrapersonal powers, however, call for more scaffolding and encouragement for collaborative problem-solving across cultures.

Our results underline that ESD in higher education can have fruitful outcomes when it is action-oriented, linking formal with informal learning, supportive of self-directed learning, participatory and collaborative, and embracing transformative pedagogy (see also Lozano et al., 2017; Rieckmann, 2018; Unesco, 2017, p. 54; Wilhelm et al., 2019). Our research also revealed that competencies are not naturally developed in teaching-learning settings, but instead they require targeted and ongoing efforts to learn about competencies through working with each competency's set of concepts, methods, and skills (see also Brundiers et al., 2021). To bolster the self-confidence of students as global citizens dedicated to driving sustainable change proactively and creatively, it is important to support their ability to conceptualize their learning, ethical thinking, and sustainability competencies on a metacognitive level.

Reflective practices such as keeping a learning journal can help students gain self-knowledge and build confidence in self-directed learning. While it is important not to overwhelm students with overly complicated exercises and instructions in practice-based learning, it is recommended to support their reflections with background reading and pedagogical guidance to help gain conceptual insight into key sustainability competencies and ethical thinking. This additional effort could improve the effectiveness of the learning journal to foster students' ethical understanding of the complexities related to sustainability challenges and help them collaborate with more confidence. (See also Chan & Lee, 2021; McCarthy, 2011; Tsingos-Lucas et al., 2017.)

According to Lozano et al. (2021), to support the integration of sustainability in higher education and to develop students' sustainability competencies, it is best to try out a combination of multiple pedagogical methods. Such multi-method and multidisciplinary approaches are likely to help graduates to "better contribute to making societies more sustainable" (Lozano, 2010, p. 643). One viable pedagogical option is to use participatory approaches that engage multiple stakeholders in grass-root and bottom-up activities, inviting participants to critically reconsider their personal interests, attitudes, values, and habits (Ferrer-Balas et al., 2010).

The Sustainable Chocolate case brought to attention a highly consumed product whose market is ever growing and production is riddled with sustainability challenges. As many are personally implicated in the development of the market through their role as chocolate consumers, exploring sustainability issues through examples from the chocolate business was a fruitful way for investigating and developing not only the students' sustainability competencies but also those of the entrepreneurs and university experts involved in the multi-stakeholder co-creation process.

According to research, learner motivation can be enhanced if learners are able to discover a personal interest in and association with the topic, challenge, or case in hand. This personal interest can then be reinforced by pedagogical support, such as problem-based learning around authentic sustainability challenges, gradually increasing learners' interest in exploring the topic and constructing new and more abstract knowledge. Ultimately, learners may grow motivated to consciously reengage with the challenge later and pursue their interests further autonomously and in wider contexts. (Harackiewicz et al., 2016; Priniski et al., 2018; Renninger & Hidi, 2016; Belland et al., 2013; Walkington & Bernacki, 2014.) Judging from the experiences of the Sustainable Chocolate case, it may be pedagogically effective to approach even the more complex sustainability issues by nurturing learners' personal involvement and interest in the challenge.

This research is a case study implemented in a special context with students, university experts and two artisan chocolate entrepreneurs. Therefore, the results cannot be generalized. However, the findings present an example of how sustainability competencies can be integrated into higher education courses to stimulate ethical, critical, and creative thinking and transformation through collaborative learning and hands-on activities focused on solving real-life sustainability challenges (see also Sidiropoulos, 2018; Remington-Doucette & Musgrove, 2015; Biedenweg et al., 2013). Further research can be focused, for example, on clarifying how intrapersonal capacities and metacognitive skills related to ethical thinking impact key competencies in sustainability.

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